Parrish, John

From: CGS Headquarters
Sent: Monday, November 13, 2006 9:12 AM
To: Parrish, John
Subject: FW: DOE's Response to California's Comments on the Draft EIS forthe Yucca Mt. Repository


DOE Response to State Comments...


DOE Response to State Comments...


Amendment to Scope of Rail Ali...

-----Original Message-----
From: Barbara Byron [mailto:Bbyron@energy.state.ca.us]
Sent: Wednesday, November 08, 2006 4:44 PM
To: jepperson@chp.ca.gov; JMcNeill@chp.ca.gov; CGS Headquarters; stepekj@cwp.swrcb.ca.gov; RGreger@dhs.ca.gov; Brad_Mettam@dot.ca.gov; charleen_fain-keslar@dot.ca.gov; aburow@dtsc.ca.gov; JWong@dtsc.ca.gov; Gary Butner; Ken Peel; Bob Pierotti; Hisam Baqai; Harold Singer; James Janopolis; Stan Martinson; Ben_Tong@oes.ca.gov; bill.potter@oes.ca.gov; lkirsch@OSPR.DFG.CA.GOV; NTILG@parks.ca.gov; chauge@water.ca.gov
Subject: DOE's Response to California's Comments on the Draft EIS forthe Yucca Mt. Repository

Hi All,

As you may know, the U.S. Department of Energy issued two federal notices (October 13) asking for public comments on their proposed new Mina rail route to Yucca Mountain and a Supplemental EIS (please see the attached PDF file).

In preparing draft comments for California on these two NOI environmental scoping documents for Yucca Mountain repository, we have prepared a quick summary of California's comments that were made in 2000 on the Draft EIS for the Yucca Mt. repository and DOE's responses to California's comments. This summary was prepared quickly, so it's a little tricky to follow, but it summarizes how DOE dealt with California's concerns and comments raised during the Draft EIS proceeding for Yucca Mt. California's comments focused on the potential groundwater impacts in Death Valley, potential spent nuclear fuel transportation impacts in California, and potential wildlife impacts.

We have a very tight deadline for preparing comments, since DOE allowed so little time for public review (the original deadline for comments was Nov. 27 but was extended to Dec. 12). I plan to prepare comments on the need for EIS scoping meetings to be held in California (DOE has only scheduled meetings in Nevada) and to summarize California's comments in 2000 on the Draft EIS for Yucca Mt., particularly any comments that DOE blew off in the Final EIS.

Please review the attached responses to our comments and let me know if there are any glaring omissions, inadequacies, or errors in DOE's reply to California's concerns about the proposed repository regarding:

Hyrdogeology: California Geological Survey, Cal EPA, Water Quality Board, DWR
Transportation Impacts (OES, CHP, DOT)
Wildlife Impacts (Fish and Game, Parks and Recreation)

Please let me know by Nov. 14, if possible. Sorry, for the rush, but we have a very tight schedule. Thanks.
If you have any questions, please phone me at 916-654-4976. Thanks.

Barbara Byron

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Hydrogeology

Comment Number	DOE Comment Number	Comment	DOE Response	MRW Comment	Comment Source
12	7.5.3.2 (5874)	The EIS should more fully evaluate potential pathways for radionuclides to reach regional groundwater supplies, such as those identified by Inyo, Nye and Esmeralda Counties.	These sites are further than the furthest distances evaluated in the EIS and thus have low risk of contamination. Furthermore, since Death Valley is at the lowest point in the area, no water will leave Death Valley and contaminate areas to the east.		Consolidated Comments
12	7.5.3.2 (5874)	The EIS should evaluate the amount and impact of change in groundwater flux in regional aquifers that will be caused by groundwater extraction for YM and propose mitigation procedures.	See Section 4.1.3.3 (added since the DEIS).		Consolidated Comments
13	7.5.3.2 (8)	The EIS should better characterize regional hydrogeology in the Amargosa and Death Valley areas. Better data and more realistic models are needed to evaluate groundwater flow and radionuclide contaminant migration toward California aquifers. The EIS should describe a groundwater monitoring program.	DOE believes it has sufficient information to make an adequate determination of environmental impacts. Yet, DOE has supported Nye County's Early Warning Drilling Program and installed a series of test wells to obtain additional data. DOE will continue a "performance confirmation program" through repository closure. Before repository closure, DOE will submit an application for a license amendment that will include a description of the post-closure monitoring program.	Groundwater monitoring program not described in detail.	Consolidated Comments
14	7.5.3.2 (5887)	The EIS should include a hydrogeologic cross-section and water-level isocontour maps.	This was added to Section 3.1.4.		Consolidated Comments

Comment Number	DOE Comment Number	Comment	DOE Response	MRW Comment	Comment Source
		basal vitrophyre and the Tram Tuff be confining?			Water Quality Board
29	7.5.3.2 (5938)	It is essential that DOE determine the amounts of inflow into the volcanic aquifers beneath YM from each of the four potential sources.	DOE has done extensive testing and has incorporated new estimates of the water balance into the EIS.	DOE has not stated how much uncertainty remains in these estimates.	Lahontan Regional Water Quality Board
30	7.5.3.2 (5939)	Why does Well JF-2a exhibit an increase in elevation when the other wells exhibit decreases in elevation? It appears that more data is required to understand the down gradient hydrogeology.	It may be that the water elevation in this well has not yet reached equilibrium. DOE recommends in the EIS that additional monitoring be conducted to determine what drives water level conditions.		Lahontan Regional Water Quality Board
31	7.5.3.2 (5940)	What is the maximum volume of water expected to percolate into the drifts?	Practically zero.		Lahontan Regional Water Quality Board
32	7.5.10 (5941)	DOE should redistill and reuse its cleaning solvents.	The solvents will be non-hazardous and will be recycled off-site. There is little chance of them contaminating the groundwater.		Lahontan Regional Water Quality Board
33	7.3 (5942)	What percentage of the repository will be affected by dripping water?	Less than 1% under current climate conditions, up to 45% under superluvial climate conditions. These results have been incorporated into the EIS. The waste package corrosion rate will be the same whether there is humid air or dripping water.		Lahontan Regional Water Quality Board
34	7.5.3.2 (5944)	DOE should conduct high-resolution geophysical surveys of the structures beneath YM.	DOE conducted several geophysical surveys.		Lahontan Regional Water Quality Board
35	7.5.3.2 (5943)	Major uncertainties remain about the fast paths through YM and the flow paths to the alluvial aquifer.	DOE continues to study this and has incorporated updated information into the EIS.	Any updates since the EIS?	Lahontan Regional Water Quality Board

Comment Number	DOE Comment Number	Comment	DOE Response	MRW Comment	Comment Source
46	7.5.3.2 (5956)	The EIS should determine the major source of Amargosa Valley aquifer recharge.	The primary water source is from water recharged at higher elevations that reaches the desert as underflow.		SWRCB
3s	7.5.3.2 (11745)	The DEIS did not include recommended scientific analyses for evaluating potential groundwater impacts in California.	DOE has determined that insufficient contaminants will reach California to impact the water chemistry.	See also 7.5.3.2 (5874)	Comments of Commissioner Laurie
6s	7.5.3.2 (12406)	Better data are needed to evaluate groundwater and contaminant flows to California.	DOE has determined that insufficient contaminants will reach California to impact the water chemistry. Since the DEIS, Nye County has collected additional data, which DOE has incorporated into its final EIS.		Comments of Commissioner Laurie
6s	7.5.3.2 (12406)	DOE should describe how it will monitor migration of radionuclides from the repository.	DOE has supported Nye County's Early Warning Drilling Program in response to monitoring concerns.	Will this program continue indefinitely?	Comments of Commissioner Laurie
6s	7.5.3.2 (12406)	The degree of uncertainty in these five areas appears to be too high to support a decision on the adequacy of Yucca Mountain: waste package corrosion, groundwater levels and aquifer conductivity, the influence of heat on water movement, the solubility and release of radionuclides into the environment, and water seepage through the repository walls.	There will always be uncertainties. The performance assessment explicitly considers the uncertainties. DOE is confident that, through its extensive testing, modeling, sensitivity scenarios, conservative estimates, and peer review, it has developed estimate of potential impacts.		Comments of Commissioner Laurie

Transportation

Comment Number	DOE Comment Number	Comment	DOE Response	MRW Comment	Comment Source
5	8.3 (149)	By failing to consider alternative transportation modes in detail, the DEIS does not adequately describe the environments of all potentially impacted areas, as is required under NEPA.	DOE believes the EIS includes enough information to make decisions on preferred shipping routes and mode. However, DOE has not yet selected a preferred route. After the Yucca Mountain site is approved, DOE will issue a Record of Decision to select a transportation mode and route.		Consolidated Comments
6	8.7 (153)	The DEIS has failed to consider possible conflicts with state and local planning processes.	Comprehensive planning will be required prior to shipment, but it is not useful now, since shipping mode and routes have not yet been selected.		Consolidated Comments
20	3.2 (51)	Alternatives to YM should be included in the EIS.	The NWPA specifies that DOE need not consider in the EIS the need for a repository, alternatives to geological disposal, or alternative sites to Yucca Mountain.		Department of Transportation
41	7.3 (232)	The EIS should incorporate the potential for long-term climate change in the long-term performance analysis.	Climate modeling was updated in the EIS based on the latest USGS and Desert Research Institute Research. The impact of global warming is within the bounds of the modeled climate ranges.		Fish and Game
16	7.3.2 (216)	Level of uncertainty is too high to support a decision on the adequacy of the project.	There will always be uncertainties. The Total System Performance Assessment, which has been developed since publication of the DEIS, explicitly considers the uncertainties, and additional studies have been conducted to assess impacts of unquantified uncertainties. DOE is confident that, through its extensive testing, modeling, sensitivity scenarios, conservative estimates, and peer review, it has developed estimate of potential impacts.		Consolidated Comments
21	3.1 (16)	DOE uses qualitative terms, such as "relatively little," in the DEIS. These are virtually meaningless.	DOE provided quantitative estimates where applicable and qualitative comparisons where applicable.		Lahontan Regional Water Quality Board
22	7.3 (222)	DOE is proposing a repository system that is designed to fail and leak radionuclides into the environment in less than the 10,000 year compliance	It would be nearly impossible to construct a repository with reasonable expectations for zero releases, but In the new analyses, releases from YM in the first 10,000 years are expected to be more than 100,000 times less than the EPA standard. DOE has collected additional data since the DEIS was		Lahontan Regional Water Quality Board

Impacts on Wildlife

Comment Number	DOE Comment Number	Comment	DOE Response	MRW Comment	Comment Source
37	7.5.4.2 (39)	New highways, railroads, or fences would pose a barrier to bighorn sheep movements, fragmenting their habitat. The EIS should include an assessment of impacts to these sheep.	DOE does not plan to modify highways in California. There could be some habitat fragmentation in Nevada; this is discussed in the EIS. DOE will conduct a more detailed assessment of impacts and mitigations once routes are selected.		Fish and Game
38	8.8.1 (5889)	The EIS should include an analysis of transportation impacts to the desert tortoise and other threatened species.	Lists of threatened species and a description of transportation impacts to biological resources have been added to the EIS. Impacts are not quantified, because no new land acquisition or construction is required. An environmental baseline for each corridor would not be practical and is not needed. However, DOE has added state route maps, numbers of shipments, and state-specific impact assessments to J.4. Additional analysis will be conducted once routes are selected.		Fish and Game
40	7.5.4 (5951)	The EIS should consider long-term impacts on animals and plants, taking into account the evolutionary time scales required for adaptation.	The EIS did consider long-term impacts to plants and animals. (Section 5.9: http://www.eh.doe.gov/NEPA/eis/eis0250/vol_1/Vol 1_chpt_5-4.pdf)		Fish and Game
7s	8.11.4 (11749)	Concern about impact of radionuclide contamination on Death Valley plants and animals.	Dosages would be too low to cause measurable detrimental population effects.		Comments of Commissioner Laurie

Comments by the State of California on the Possible Site Recommendation for Yucca Mountain, October 19, 2001

These comments were not incorporated into the final EIS.

1. More comprehensive assessments of the risks of terrorist attacks and sabotage are needed. DOE should evaluate whether current physical protection requirements for spent fuel shipments are sufficient.

2. The DEIS transportation analysis was conducted assuming an average SNF age of 26 years. However, DOE has proposed fuel-blending, which could result in large amounts of 5-10 year old SNF being shipped. This could require a greater or even sole reliance on truck shipments. The increased risks from shipping hotter fuel should be assessed.

3. DOE has made progress in its hydrogeologic investigation, but key uncertainties remain. More analysis is required before a site suitability determination can be made. In particular: the relationship between the perched water and the volcanic aquifer north of the site, determination of the transient zone between the volcanic and alluvial systems, decrease in uncertainty with regard to groundwater flow beneath the site, coordination with USGS modeling that encompasses the area from south of YM to Death Valley, ascertaining whether the carbonate and volcanic groundwater systems are independent.

Number	DOE Comment Number	Category	Comment	DOE Response	MRW Comments	Comment Source
1	3.2 (80)	Scoping	The DEIS does not comply with NEPA requirements	It does comply.	See subsequent comments for more detail.	Consolidated Comments
1	3.2 (80)	Scoping	The EIS underreported the potential transportation impacts of the proposed project by deferring detailed consideration of impacts to future assessments. This has the effects of avoiding full disclosure, nullifying public involvement, and requiring decision-makers to act on incomplete information.	No DOE Response.	This is discussed further on. See comment 8.3 (149).	Consolidated Comments
2	3.2 (5793)	Hydrogeology	The EIS should include regional groundwater impact evaluations, including special consideration for Death Valley.	No DOE Response.	This is discussed further on. See questions 36 (8.11.4 #5946).	Consolidated Comments
2	3.2 (5793)	Scoping	The DEIS does not provide a complete analysis of the proposed project and does not reflect the scope of comments raised at the public meetings.	DOE considered all comments but did not include analysis of those that were unrelated to the scope or content of the EIS or that were deemed to be too speculative.		Consolidated Comments
2	3.2 (5793)	Transportation	The DEIS does not include route and mode-specific analyses of transportation impacts, identify DOE's modal choice, or include highway or rail routing policies.	The final EIS does identify DOE's preferred modal choice (rail), but DOE has not yet selected a transportation route or mode. DOE will wait until the Yucca Mountain site is selected before evaluating transportation options.		Consolidated Comments
2	3.2 (5793)	Transportation	DOE should state its intentions regarding full scale cask testing.	DOE will use NRC-certified casks.		Consolidated Comments
2	3.2 (5793)	Transportation	DOE should develop policies regarding Sections 180 (c) (emergency planning) assistance.	This was completed in 1998. See Sections M.6 and M.7 (available at http://www.eh.doe.gov/NEPA/eis/eis0250/vol_2/Vol 2_M.pdf)		Consolidated Comments
3	3.2 (64)	Scoping	The DEIS did not analyze reasonable no-action alternatives.	The NWPA specifies that DOE need not consider in the EIS the need for a repository, alternatives to geological disposal, or alternative sites to Yucca Mountain. DOE included no-action alternatives only as a basis for comparison and to reflect a range of possible impacts. DOE used assumptions for the no-action analyses that minimized impacts in order not to influence the results to favor the proposed action.		Consolidated Comments
4	3.3 (50)	Public Participation	Only one public hearing was held in California, and sufficient notification was not provided to potentially impacted residents.	DOE conducted extensive public outreach; however, it was impractical for it to hold hearings at every location potentially affected by waste shipments.		Consolidated Comments

4	3.3 (50)	Public Participation	Since the DEIS does not contain information on transport routes, communities do not know whether they will be impacted by shipments. DOE should hold public hearings in California along shipping routes after these routes are designated.	No DOE Response.	DOE has not committed to holding public meetings in California along transport routes.	Consolidated Comments
5	8.3 (149)	Scoping	By failing to consider alternative transportation modes in detail, the DEIS does not adequately describe the environments of all potentially impacted areas, as is required under NEPA.	DOE believes the EIS includes enough information to make decisions on preferred shipping routes and mode. However, DOE has not yet selected a preferred route. After the Yucca Mountain site is approved, DOE will issue a Record of Decision to select a transportation mode and route.		Consolidated Comments
6	8.7 (153)	Scoping	The DEIS has failed to consider possible conflicts with state and local planning processes.	Comprehensive planning will be required prior to shipment, but it is not useful now, since shipping mode and routes have not yet been selected.		Consolidated Comments
6	8.7 (153)	Transportation	The DEIS analysis of transportation risks is too superficial and does not provide sufficient detail to evaluate potential impacts, such as transportation modes and routes, evaluations of route-specific populations and environmental consequences.	No DOE Response.	This is discussed further. See 8.3 (149).	Consolidated Comments
6	8.7 (153)	Transportation	DOE should develop a comprehensive transportation program using the WIPP program as a model. The revised EIS should include a full and detailed discussion of the program and an evaluation of terrorism and sabotage concerns.	No DOE Response.		Consolidated Comments
6	8.7 (153)	Transportation	The EIS should identify and analyze shipment routes to the repository in order to provide states with adequate time to consider routing alternatives. These routes should be subject to public review.	No DOE Response.	This is discussed elsewhere.	Consolidated Comments

7	8.3.1 (5799)	Transportation	California is concerned that DOE will route shipments on roads not designated for heavy truck traffic, such as California SR-127, which is included as part of an alternate route in the DEIS.	DOT regulations restrict DOE to selecting either interstate highways, bypasses or beltways or routes designated by a state or a tribe. CA-127 was proposed by the State of Nevada as an alternate route and was included in the DEIS as part of a sensitivity analysis of the preferred routes. In order for it to be used, it would have to undergo a routing analysis to consider public risk in accordance with DOT regulations.	The sensitivity analysis conducted in the EIS shows the routes that use CA-127 (Cases 2 and 3) as comparing favorably to the base case. This may prepare the way for one of these routes to be designated as preferred routes. It would appear that California's concerns about the adequacy of this road for heavy truck traffic were not adequately incorporated into the EIS evaluation. (See Table J-47: http://www.eh.doe.gov/NEPA/eis/eis0250/vol_2/Vol2_J-3-3.pdf)	Consolidated Comments
8	8.3 (213)	Transportation	The lack of emergency response capabilities on SR-127 would make Section 180(c) compliance very costly, and the DEIS does not indicate the extent of funding that will be made available, raising concerns that State and local communities will be burdened by significant costs. DOE should identify emergency response and roadway improvements and associated costs and commit to working with states and localities to develop transport and emergency response plans, training and exercises.	DOE added to Section M.5 information on Section 180(c) funding. DOE will fund training of public safety officers for routine and emergency response procedures. Federal response capabilities could also be activated. Shipping routes will be identified at least four year prior to the first shipment, allowing sufficient time to develop plans.	Sections M.5 and M.6 provide additional information on the 180 (c) funding process, but they do not provide an estimate of total grant money that will be available. In addition, they specify a one-time planning grant of $150,000 to eligible states for determining funding and training needs. For a state that will be impacted as much as California, that amount will likely be far from adequate.	Consolidated Comments
9	8.3 (201)	Transportation	DOE, not the carrier, should be responsible for route analysis and selection. DOE should identify the number of shipments and routes and the estimated costs to states for truck and rail safety inspections.	Carriers will select preferred routes and provide them to states for comment. DOE will then make final route selections. It is too early to accurately predict numbers of shipments, and DOE has not yet selected shipping routes. DOE has added maps of representative routes and listed health and safety impacts for each impacted state.		Consolidated Comments

10	8.8.1 (12577)	Transportation	The EIS should include risks associated with roadway geometrics and maintenance and human error in cask construction and operation. The current analysis has been criticized for changing assumptions regarding cask capacity, spent fuel radioactivity, and the risk of sabotage.	The analysis used the best available data and included site-specific analyses. When estimates were required, DOE used realistic or conservative estimates. (Always using conservative estimates yields unrealistic results and masks differences between options.) Section J.1.4.2.1 discusses risk due to human error, though extensive testing and training and detailed procedures will minimize this risk.		Consolidated Comments
10	8.8.1 (12577)	Transportation	The EIS should include an assessment of costs to states, tribes and local communities to provide emergency response preparation for spent fuel shipments and to upgrade roads and rail lines, where necessary.	DOE will provide funding for emergency response training. No special transportation infrastructure outside of Nevada will be required.	Infrastructure requirements will depend on the selected route. If alternate routes are chosen, infrastructure upgrades may be required.	Consolidated Comments
10	8.8.1 (12577)	Transportation	The EIS should evaluate the site-specific risks from earthquakes, flooding, poor road conditions, weather conditions, and traffic congestion.	Package failure due to an earthquake did not meet the one-in-ten-million-year standard required for inclusion in this analysis. Adverse weather and road conditions are discussed in section M.3. Transportation contractors will be responsible for developing on-the-road procedures for dealing with adverse conditions.		Consolidated Comments
10	8.8.1 (12577)	Transportation	The DEIS does not provide a meaningful quantitative transportation risk assessment.	See Chapter 6 and Appendix J.	The final EIS includes an updated risk assessment based on new data, including data from the NRC, that results in a lower estimate of risk. (http://www.eh.doe.gov/NEPA/eis/eis0250/vol_1/Vol1_chpt_6-0.pdf)	Consolidated Comments
11	7.5.10 (5868)	Transportation	The EIS should state that DOE will comply with all California permitting requirements for hazardous waste management.	1. DOE will delist all listed hazardous waste prior to shipment (by treating it so that it does not exhibit characteristics of haz. waste). 2. DOE is not a California public agency and the repository is not a California project, so CEQA does not apply. 3. DOE will comply with applicable laws, but it does not anticipate the need for haz. waste permits.	Does the State agree with DOE's characterization of CEQA requirements?	Consolidated Comments
12	7.5.3.2 (5874)	Hydrogeology	The EIS should more fully evaluate potential pathways for radionuclides to reach regional groundwater supplies, such as those identified by Inyo, Nye and Esmeralda Counties.	These sites are further than the furthest distances evaluated in the EIS and thus have low risk of contamination. Furthermore, since Death Valley is at the lowest point in the area, no water will leave Death Valley and contaminate areas to the east.		Consolidated Comments

12	7.5.3.2 (5874)	Hydrogeology	The EIS should evaluate the amount and impact of change in groundwater flux in regional aquifers that will be caused by groundwater extraction for YM and propose mitigation procedures.	See Section 4.1.3.3 (added since the DEIS).		Consolidated Comments
13	7.5.3.2 (8)	Hydrogeology	The EIS should better characterize regional hydrogeology in the Amargosa and Death Valley areas. Better data and more realistic models are needed to evaluate groundwater flow and radionuclide contaminant migration toward California aquifers. The EIS should describe a groundwater monitoring program.	DOE believes it has sufficient information to make an adequate determination of environmental impacts. Yet, DOE has supported Nye County's Early Warning Drilling Program and installed a series of test wells to obtain additional data. DOE will continue a "performance confirmation program" through repository closure. Before repository closure, DOE will submit an application for a license amendment that will include a description of the post-closure monitoring program.	Groundwater monitoring program not described in detail.	Consolidated Comments
14	7.5.3.2 (5887)	Hydrogeology	The EIS should include a hydrogeologic cross-section and water-level isocontour maps.	This was added to Section 3.1.4.		Consolidated Comments
14	7.5.3.2 (5887)	Hydrogeology	More field data on groundwater flow are needed.	This was added to Section 3.1.4.2.1.		Consolidated Comments
15	7.3.1 (185)	Thermal Load	The "high thermal load alternative" appears to be more protective for the groundwater than the preferred alternative. DOE should reconsider its preferred alternative.	Since issuing the DEIS, DOE has continued to analyze design features and operating modes and has replaced the high and low thermal load alternatives with a flexible design alternative that allows for a range of operating temperatures. Both high and low temperature designs will be in compliance with environmental protection standards.		Consolidated Comments
16	7.3.2 (216)	Uncertainty	Level of uncertainty is too high to support a decision on the adequacy of the project.	There will always be uncertainties. The Total System Performance Assessment, which has been developed since publication of the DEIS, explicitly considers the uncertainties, and additional studies have been conducted to assess impacts of unquantified uncertainties. DOE is confident that, through its extensive testing, modeling, sensitivity scenarios, conservative estimates, and peer review, it has developed estimate of potential impacts.		Consolidated Comments
17	8.11.4 (5905)	Transportation	The EIS should consider long-term impacts on animals and plants, including the bighorn sheep.	DOE did consider impacts on plants and animals and found them to be negligible. DOE will not create new transportation corridors (so bighorn sheep habitat will not be fragmented), and existing routes will not impact California parks.	What about proposed rail line?	Consolidated comments plus Department of Fish and Game letter

18	8.3 (161)	Transportation	The DEIS is inadequate since it does not identify routes or mode of transport. Impacts to non-interstate routes outside of Nevada have not been assessed. A thorough analysis of potential impacts from each transportation alternative has not been conducted. A complete environmental assessment that considers mitigation for infrastructure upgrades, emergency response preparedness, socio-economic impacts, transport risks, and accident consequences should be conducted.	Routes will be selected at least four years prior to the first shipment. Unless states or tribes designate alternate routes, only interstate routes will be used. DOE believes that it has adequately analyzed transportation impacts. (See Section 6.2.) Infrastructure upgrades are not expected and thus are not included in the analysis. Community-specific assessments are also not included, as DOE does not believe them to be necessary.		Department of Transportation
19	8.1 (5912)	Transportation	Non-interstate routes leading to YM were not designed for heavy trucks or quick emergency response and are heavily traveled by tourists and recreationalists.	Shipments will only occur on interstates. DOE will provide funding for emergency response planning and for mitigation of any incidents.	Shipments could occur on state roads if these roads are designated as preferred routes. See 8.3.1 (5799).	Department of Transportation
20	3.2 (51)	Scoping	Alternatives to YM should be included in the EIS.	The NWPA specifies that DOE need not consider in the EIS the need for a repository, alternatives to geological disposal, or alternative sites to Yucca Mountain.		Department of Transportation
21	3.1 (16)	Analysis	DOE uses qualitative terms, such as "relatively little," in the DEIS. These are virtually meaningless.	DOE provided quantitative estimates where applicable and qualitative comparisons where applicable.		Lahontan Regional Water Quality Board
22	7.3 (222)	Analysis	DOE is proposing a repository system that is designed to fail and leak radionuclides into the environment in less than the 10,000 year compliance period. Its radionuclide transport modeling is based on little hard data.	It would be nearly impossible to construct a repository with reasonable expectations for zero releases, but In the new analyses, releases from YM in the first 10,000 years are expected to be more than 100,000 times less than the EPA standard. DOE has collected additional data since the DEIS was published and now has a better understanding of transport mechanisms.		Lahontan Regional Water Quality Board
23	7.5.3.2 (230)	Hydrogeology	Groundwater appears to move from YM to the accessible environment in less than 10,000 years (raising the possibility of groundwater contamination)	DOE modeling has found that natural and engineered barriers will keep the release of radioactive materials during the first 10,000 years well below legal limits and that contaminants from the repository, which will travel through the groundwater, cannot reach any part of California.		Lahontan Regional Water Quality Board
24	7.5.3.2 (5932)		DOE does not provide an estimate of the volume of water flux through the mountain and the areas most likely to be affected by the "fast paths"	Section 3.1.4.2.2 discusses volume of water flux. Fast-flow pathways correlate with mapped surface faults.		Lahontan Regional Water Quality Board

25	7.5.3.1 (12175)	Hydrogeology	There's an error in Table 3-10. The amount of total dissolved solids is smaller than individual components.	Corrected	DOE's correction reduced the volume of dissolved solids in some components by incorporating data from only a subset of the sampling sites. This had a large impact on the results, raising concerns about the validity of the sample.	Lahontan Regional Water Quality Board
26	7.5.3.2 (2)	Hydrogeology	How much water is expected to flow to Death Valley and what evidence does DOE have to support this figure?	No measurable adverse impacts are expected south of the repository, including at Death Valley. This is based on an extensive groundwater characterization program. See response to this question and chapter 5 of the EIS.		Lahontan Regional Water Quality Board
27	7.5.3.2 (5935)	Hydrogeology	DOE should estimate at what level of precipitation fracture flow becomes the dominant flow path.	This has been studied extensively. Fracture flow is dominant in some areas; matrix flow is dominant in other areas.		Lahontan Regional Water Quality Board
28	7.5.3.2 (5937)	Hydrogeology	With their high apparent conductivities, how can the basal vitrophyre and the Tram Tuff be considered confining units?	The hydrogeologic units above and below these areas have high conductivities, but these units do not.		Lahontan Regional Water Quality Board
29	7.5.3.2 (5938)	Hydrogeology	It is essential that DOE determine the amounts of inflow into the volcanic aquifers beneath YM from each of the four potential sources.	DOE has done extensive testing and has incorporated new estimates of the water balance into the EIS.	DOE has not stated how much uncertainty remains in these estimates.	Lahontan Regional Water Quality Board
30	7.5.3.2 (5939)	Hydrogeology	Why does Well JF-2a exhibit an increase in elevation when the other wells exhibit decreases in elevation? It appears that more data is required to understand the down gradient hydrogeology.	It may be that the water elevation in this well has not yet reached equilibrium. DOE recommends in the EIS that additional monitoring be conducted to determine what drives water level conditions.		Lahontan Regional Water Quality Board
31	7.5.3.2 (5940)	Hydrogeology	What is the maximum volume of water expected to percolate into the drifts?	Practically zero.		Lahontan Regional Water Quality Board
32	7.5.10 (5941)	Hydrogeology	DOE should redistill and reuse its cleaning solvents.	The solvents will be non-hazardous and will be recycled off-site. There is little chance of them contaminating the groundwater.		Lahontan Regional Water Quality Board
33	7.3 (5942)	Hydrogeology	What percentage of the repository will be affected by dripping water?	Less than 1% under current climate conditions, up to 45% under superluvial climate conditions. These results have been incorporated into the EIS. The waste package corrosion rate will be the same whether there is humid air or dripping water.		Lahontan Regional Water Quality Board
34	7.5.3.2 (5944)	Hydrogeology	DOE should conduct high-resolution geophysical surveys of the structures beneath YM.	DOE conducted several geophysical surveys.		Lahontan Regional Water Quality Board
35	7.5.3.2 (5943)	Hydrogeology	Major uncertainties remain about the fast paths through YM and the flow paths to the alluvial aquifer.	DOE continues to study this and has incorporated updated information into the EIS.	Any updates?	Lahontan Regional Water Quality Board

35	7.5.3.2 (5943)	Hydrogeology	It is unclear what effects faults might have on ground flow.	No DOE Response.		Lahontan Regional Water Quality Board
36	8.11.4 (5946)	Hydrogeology	DOE should study the impact of reduced groundwater flows to California on fish and wildlife populations and develop adequate mitigations.	DOE does not anticipate that California groundwater use will be impacted by the project. (See Section 4.1.3.3)		Fish and Game
37	7.5.4.2 (39)	Wildlife	New highways, railroads, or fences would pose a barrier to bighorn sheep movements, fragmenting their habitat. The EIS should include an assessment of impacts to these sheep.	DOE does not plan to modify highways in California. There could be some habitat fragmentation in Nevada; this is discussed in the EIS. DOE will conduct a more detailed assessment of impacts and mitigations once routes are selected.		Fish and Game
38	8.8.1 (5889)	Wildlife	The EIS should include an analysis of transportation impacts to the desert tortoise and other threatened species.	Lists of threatened species and a description of transportation impacts to biological resources have been added to the EIS. Impacts are not quantified, because no new land acquisition or construction is required. An environmental baseline for each corridor would not be practical and is not needed. However, DOE has added state route maps, numbers of shipments, and state-specific impact assessments to J.4. Additional analysis will be conducted once routes are selected.		Fish and Game
39	7.1.1 (5948)	Repository Closure	The repository closure should be discussed in more detail.	See supporting documents (e.g., DIRS 151853-CRWMS M&O 2000)		Fish and Game
40	7.5.4 (5951)	Wildlife	The EIS should consider long-term impacts on animals and plants, taking into account the evolutionary time scales required for adaptation.	The EIS did consider long-term impacts to plants and animals. (Section 5.9: http://www.eh.doe.gov/NEPA/eis/eis0250/vol_1/Vol1_chpt_5-4.pdf)		Fish and Game
41	7.3 (232)	Scoping	The EIS should incorporate the potential for long-term climate change in the long-term performance analysis.	Climate modeling was updated in the EIS based on the latest USGS and Desert Research Institute Research. The impact of global warming is within the bounds of the modeled climate ranges.		Fish and Game
42	7.5.3.2 (5955)	Hydrogeology	The potential of surface water contamination under possible future climate conditions should be evaluated.	A discussion in Section 5.3 was added to address this. It found that no contamination would ensue under numerous climate change scenarios.	I cannot locate this discussion in Section 5.3; however, there is a discussion in a background report: http://www.ocrwm.doe.gov/documents/m2hd_b/index.htm (section 3.2.6)	Fish and Game

43	3.2 (59)	Analysis	Level of uncertainty is too high to support a decision on the adequacy of the project.	DOE believes that that EIS conservatively represents foreseeable impacts and is sufficient to support a decision on the project. Subsequent implementation decisions (such as transport routes) will require further analysis and NEPA reviews. Since the DEIS was published, DOE has improved its understanding of repository-environment interactions and modified the project to enhance waste containment and isolation.		Fish and Game
44	7.5.3.2 (5961)	Hydrogeology	The EIS should include potentiometric surface maps.	See Section 3.1.4.		SWRCB
45	7.5.3.2 (5962)	Hydrogeology	The EIS should consider potential pathways across the upper volcanic aquifer.	Contaminant modeling shows that flow is primarily through the middle volcanic aquifer and the valley fill alluvium.		SWRCB
45	7.5.3.2 (5962)	Hydrogeology	The DEIS appears to contain contradictory designations of aquifers.	Previous studies have used inconsistent nomenclature. There is no real contradiction.		SWRCB
45	7.5.3.2 (5962)	Hydrogeology	More data is required to characterize the carbonate aquifer in the vicinity of Yucca Mountain.	No DOE Response.		
46	7.5.3.2 (5956)	Hydrogeology	The EIS should determine the major source of Amargosa Valley aquifer recharge.	Primary water source is from water recharged at higher elevations that reaches the desert as underflow.		SWRCB
47	8.3.3 (11810)	Transportation	Scale of transport through California will be unprecedented and will impact local communities (including LA and Sacramento)	DOE's estimates of shipments through California are much lower than Nevada's estimates. However, the routes have not yet been finalized. Before shipments begin, states will have the opportunity to identify alternate preferred shipping routes.		State of California